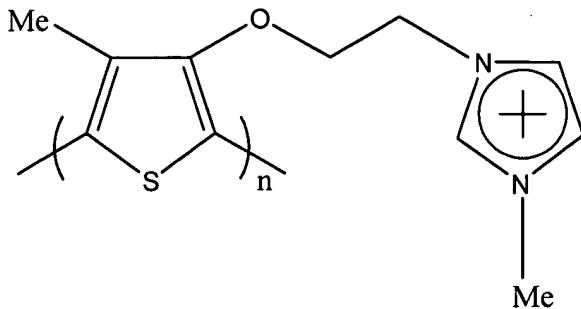


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### AMENDMENTS TO THE CLAIMS

1. (Original) An optical sensor for detecting a target comprising a single-stranded aptamer complementary to said target, and a water-soluble cationic polythiophene derivative of the following formula:



wherein "n" is an integer ranging from 6 to 100.

2. (Currently amended) The An optical sensor of as defined in claim 1, wherein said target is selected from the group consisting of potassium ions, small organic molecules, amino acids, proteins, whole cells and nucleotides.

3. (Currently amended) The An optical sensor of as defined in claim 1, wherein said aptamer is an oligonucleotide.

4. (Currently amended) The An optical sensor of as defined in claim 3, wherein said oligonucleotide is single-stranded DNA.

5. (Currently amended) The An optical sensor of as defined in claim 4, wherein said single-stranded DNA has the following sequence:

5'-GGTTGGTGTGGTTGG-3'.

6. (Currently amended) The An optical sensor of as defined in claim 5, wherein said target is human  $\alpha$ -thrombin.

7. (Currently amended) The An optical sensor of as defined in claim 4, wherein said single-stranded DNA has the following sequence:

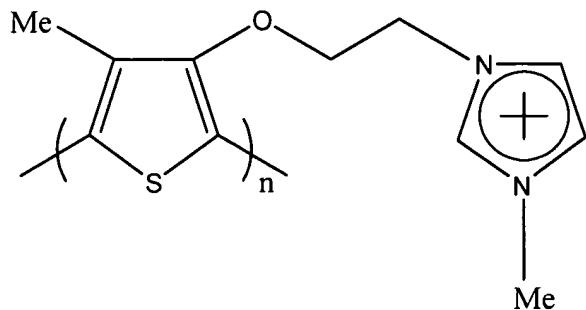
5'-ATTATACCTGGGGAGTATTGCGGAGGAAGGTATAAT-3'.

8. (Currently amended) The An optical sensor of as defined in claim 7, wherein said target is D-adenosine.

9. (Original) A method for detecting a target comprising the steps of:

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- a) contacting a sample suspected of containing the target with an optical sensor, said optical sensor including a single-stranded aptamer complementary to said target, and a water soluble cationic polythiophene derivative of the following formula:



wherein "n" is an integer ranging from 6 to 100; and

- b) detecting binding of the aptamer to the target by measuring an optical signal.

10. (Currently amended) ~~A method as defined in The method of~~ claim 9, wherein said optical signal is a UV-Visible absorption or fluorescence spectrum.

11. (Currently amended) ~~A method as defined in The method of~~ claim 10, wherein said target is selected from the group consisting of potassium ions, small organic molecules, amino acids, proteins, whole cells and nucleotides.

12. (Currently amended) ~~A method as defined in The method of~~ claim 10, wherein said aptamer is an oligonucleotide.

13. (Currently amended) ~~A method as defined in The method of~~ claim 12, wherein said oligonucleotide is single-stranded DNA.

14. (Currently amended) ~~A method as defined in The method of~~ claim 13, wherein said single-stranded DNA has the following sequence:

5'-GGTTGGTGTGGTTGG-3'.

15. (Currently amended) ~~A method as defined in The method of~~ claim 14, wherein said target is human  $\alpha$ -thrombin.

16. (Currently amended) ~~A method as defined in The method of~~ claim 13, wherein said single-stranded DNA has the following sequence:

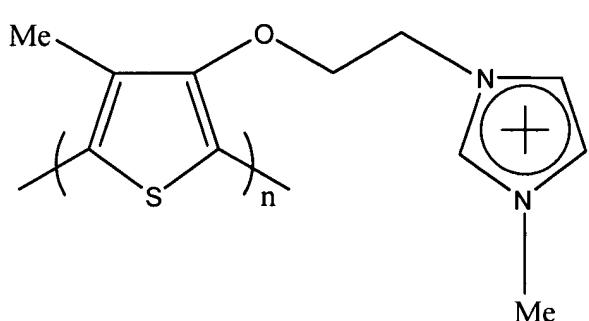
5'-ATTATACCTGGGGAGTATTGCGGAGGAAGGTATAAT-3'.

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17. (Currently amended) A method as defined in The method of claim 16, wherein said target is D-adenosine.

18. (Original) A method for detecting a target comprising the steps of:

- a) contacting a sample suspected of containing the target with an aptamer known to be complementary to the target;
- b) further contacting the sample with a water-soluble cationic polythiophene derivative of formula:



wherein "n" is an integer ranging from 6 to 100; and

- c) detecting binding of the aptamer to the target by measuring an optical signal.

19. (Currently amended) A method as defined in The method of claim 18, wherein said optical signal is a UV-Visible absorption or fluorescence spectrum.

20. (Currently amended) A method as defined in The method of claim 19, wherein said target is selected from the group consisting of potassium ions, small organic molecules, amino acids, proteins, whole cells and nucleotides.

21. (Currently amended) A method as defined in The method of claim 19, wherein said aptamer is an oligonucleotide.

22. (Currently amended) A method as defined in The method of claim 21, wherein said oligonucleotide is single-stranded DNA.

23. (Currently amended) A method as defined in The method of claim 22, wherein said single-stranded DNA has the following sequence:

5'-GGTTGGTGTGGTTGG-3'.

24. (Currently amended) A method as defined in The method of claim 23, wherein said target is human  $\alpha$ -thrombin.

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25. (Currently amended) ~~A method as defined in The method of~~ claim 22, wherein said single-stranded DNA has the following sequence:

5'-ATTATACCTGGGGAGTATTGCGGAGGAAGGTATAAT-3'.

26. (Currently amended) ~~A method as defined in The method of~~ claim 25, wherein said target is D-adenosine.

27-34. (Canceled)

35. (Currently amended) ~~A method as defined in The method of~~ claims 15 and 24 wherein said human  $\alpha$ -thrombin is present in an amount of at least  $2 \times 10^{-15}$  mol.

36. (Currently amended) ~~A method as defined in The method of~~ claims 17 and 26 wherein said D-adenosine is present in an amount of at least  $2 \times 10^{-14}$  mol.

37. (New) The method of claim 24, wherein said human  $\alpha$ -thrombin is present in an amount of at least  $2 \times 10^{-15}$  mol.

38. (New) The method of claim 26, wherein said D-adenosine is present in an amount of at least  $2 \times 10^{-14}$  mol.